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Basel Committee on Banking Supervision
Bank for International Settlements
CH-4002 Basel, Switzerland
Sent by email to: baselcommittee@bis.org

29th August 2012

Re: Fundamental Review of the Trading Book

Dear Chairman Ingves

Rivast Consulting is pleased to respond to the Committee's consultative document on the *Fundamental Review of the Trading Book* ('BCBS 219'). We share the Committee's goal of a more resilient banking sector, and welcome the Committee's Fundamental Review. The trading book rules have evolved in a piecemeal fashion since the 1996 Market Risk Amendment and, as the Committee says, the Basel 2.5 revisions do not fully address the shortcomings of the current Market Risk framework. Therefore a thorough review is particularly apposite.

We applaud many of the elements of BCBS 219 including:

- the replacement of value at risk with expected shortfall;
- the proposal that all banks should perform standardised rules calculations for the entire market risk portfolio so that the gap between models and standard rules is known;
- the intention to produce revised standard rules which are more risk sensitive but still simple enough for all banks to be able to apply;
- a regulatory limit to the diversification benefits available in internal models approaches; and
- the use of book-level backtesting and P&L attribution tests in determining more granular internal models permissions.

Key Issues

Before turning to the Committee's specific questions, we discuss four vital over-arching issues.



These are:

- I. The need to articulate the type(s) of financial system dynamics which regulation seeks to encourage or discourage, and the creation of incentive structures which meet those aims;
- II. The purpose of regulatory capital;
- III. The importance of comprehensive calibration and impact studies; and
- IV. The scope of the Fundamental Review.

I. Articulation of Aims

The Basel Accords form a key incentive structure for the financial system. This is particularly so since regulatory capital is a real constraint for many banks, and thus shapes their actions. Therefore it is vital that the Committee clearly articulates the aim of the capital framework. This task is complex because regulators cannot take the current system (and its distribution of risks) as given and then seek to write 'prudent' rules; rather, they must attempt to write rules which encourage the development of desirable characteristics. This is because the system adapts in response to regulation. It means that questions such as

If banks had had more capital but the same risks in 2007, would they have survived the crisis better?

are essentially meaningless: banks would not have had the same risks had they been required to hold more capital. A much better question is

Would the financial system have been more resilient to the 2007+ crisis had banks been better capitalized for market risk?

Answering this question requires an assessment of the likely response of both regulated and unregulated institutions to changes in regulation. What risks would banks have had in such a hypothetical regulatory environment? What risks would non-banks have had, and would their vulnerabilities in turn have created stress for regulated institutions?

A primary issue, then, in any fundamental review of the regulatory framework is

What kind of financial system, providing what types of services, at what cost, do we want?

Answers to these questions must come before attempting to construct capital rules.

It should be noted here that enhancing financial stability does not always and necessarily take precedence over concerns about the form of the financial system: to use an extreme example, very well capitalised banks which simply take retail deposits and invest them in the highest quality government bonds would be very stable, but if all retail deposits were



used in this way, then the supply of credit to the real economy would be severely compromised. Regulators therefore do not require retail deposits to be entirely invested in the best bonds despite the narrow benefits for stability of such a policy.

Similar issues over form and incentives arise in the Fundamental Review of the Trading Book, notably

- *The problem of liquidity provision.* Laudably, the Committee discusses capital requirements for less liquid positions. However the discussion assumes that the key issue is ensuring that the level of capital held against a position reflects its liquidity. There is a different concern which at least deserves consideration, namely the importance of liquidity provision. Put tersely, if less liquid positions require more capital, banks will take less of them, making them even less liquid. The market will quickly segment into a small number of highly liquid and in capital terms 'cheap' assets¹ and a much larger number of very illiquid, 'expensive' ones. Banks will be very reluctant to make markets in illiquid assets. Is this change one that supervisors wish to see and, if not, do liquidity-sensitive capital requirements meet the broader supervisory objective of ensuring that market liquidity is available when the system needs it?
- *Trading book/banking book arbitrage.* Any incentive whereby banking book positions attract both less capital and create less earning volatility than trading book ones, creating a preference for booking in the banking book where possible, is undesirable. Fair value accounting and trading book risk management both represent good discipline; the same risks held outside the trading book risk framework may not be so prudently monitored². We discuss this problem further below, simply asking here that the Committee ask itself whether the result of the Fundamental Review of the Trading Book should be that less risk is booked and risk managed in the Trading Book³.

II. The Use of Capital

In many cases, capital that banks hold up to the required minimum is not available to absorb losses. This is because banks often fail due to liquidity risk before they fail due to insolvency. Funding markets require that banks who wish to borrow be well capitalised at **all times**, so capital up to the minimum is not available to absorb losses because if it is so used, funding is withdrawn, and the institution fails.

¹ If the result of the fundamental review were to be increased concentration of bank positions in a small number of liquid instruments, stability would not be enhanced.

² It can be argued that the recent JPMorgan CIO credit trading losses are an example of this unfortunate phenomenon.

³ In this context we welcome the commitment in BCBS 219 to further work on interest rate risk in the banking book. This, together with FX risk in the banking book, represents a major uncapped risk in the current framework.



It is only capital **above** the minimum⁴ which provides meaningful going concern loss absorbency. Therefore setting higher minimum capital requirements can make the financial system **less** stable, as it encourages funding markets to require higher capital levels before they will lend⁵.

Before changing capital requirements, then, the Committee should set out a clear position on the balance between minimum required capital (which arguably is not available to absorb going-concern losses) and capital above the minimum (which often is).

In this context it is important to understand that capital ratios are a key communication tool between banks and markets. A Basel ratio of, say, 10% is shorthand for an enormously complex calculation which is intended to measure whether a bank is well-capitalised or not, and thus to provide confidence that it can be safely funded. This role of capital-as-confidence-giver is more important than capital-as-loss-absorption because liquidity risk causes more failures than solvency risk⁶. Capital requirements which are complex, difficult to understand and thus prone to suspicion of inconsistent implementation are not optimal for providing confidence. They are therefore less desirable than simpler more consistently implemented ones **even if the simpler ones are less risk sensitive**. It should be a clear aim of the Committee to produce capital requirements which are not just reasonably prudent but which can credibly serve as a globally consistent, easily understandable measure of bank capitalisation.

The need to design a capital framework which gives funding markets the confidence to lend to well-capitalised banks leads to another key consideration, that of procyclicality. Capital requirements which rise in a crisis are destabilising. We therefore commend the Committee's efforts to reduce the procyclicality of the Basel framework. In the Fundamental Review, the Committee proposes the replacement of the current VAR plus stressed VAR market risk charge with an expected shortfall measure. *A priori*, this would seem to further reduce procyclicality provided that expected shortfall is calculated using a sufficiently long time series (i.e. one which incorporates stressed periods). However this may not be true in practice. Hence we strongly urge the Committee to review the procyclicality of its proposed capital measure as detailed design proceeds and, if necessary, modify it to enhance its time-stability⁷.

⁴ We mean here capital above the minimum required to keep the confidence of the funding markets, rather than above the regulatory minimum, to the extent that those two notions differ.

⁵ Of course, higher minimum capital requirement may reduce the cost of default and increase the likelihood that an institution can pass through resolution without losses to deposit protection schemes, but a financial system with frequently failing institutions is not commonly thought of as 'stable'.

⁶ See *Maintaining Confidence: Understanding and preventing a major financial institution failure mode*, D. Murphy, 2012 for a further discussion of liquidity risk, solvency risk and the role of capital.

⁷ A capital model is said to be time-stable if similar capital is attributed to the same portfolio regardless of the time period used to calibrate the model.



It should be noted here that a capital measure which is time-stable can always be scaled to achieve a desired level of capital, while a procyclical one, even if initially prudent, may become less prudent over time, leading to a potentially catastrophic loss of confidence in the capital framework.

III. Calibration and Impact Studies

We recognise that BCBS 219 is of a conceptual nature, and welcome the opportunity to comment on the issues it raises before the calibration, impact analysis and parallel running phases of regulatory policy making. However, those phases will be of vital importance in the success of the Fundamental Review. We would urge the Committee to commit substantial resources to each of these phases, and to ensure that there are further opportunities for detailed comment during each of them. The experience of Basel 3 – where substantial change was implemented quickly and in some cases without the resources needed to ensure an optimal calibration – was not entirely positive, and a more deliberative process for the Fundamental Review will almost certainly lead to a better overall result.

IV. Scope

We welcome the Committee's identification of CVA risk as an issue which should be considered in the revised market risk framework. CVA is a fair value concept, and thus principally a trading book concern. Moreover the Basel 3 CVA capital rules differ substantially from the treatment of the same risks elsewhere in the Basel framework: the market risk of CVA is not capitalised (resulting in a capital charge on hedges where firms prudently manage it), while the credit spread risk of CVA is capitalised using a more penal approach than the same risk taken using different instruments⁸. We would therefore welcome the incorporation of CVA and its hedges into the revised market risk framework.

Similarly, the rest of the counterparty credit risk framework should be revised to ensure consistency with the revised market risk framework. Thus for instance the question of how risky CCP default funds are is intimately related to the question of how to calculate capital on a portfolio of derivatives receivables⁹, which in turn is essentially a question about the combined market and credit risks of such a portfolio. These combined risks should be treated equitably in the capital framework however they arise.

⁸ The growth of CVA securitisation is a direct consequence of the Basel 3 framework's outsized charge for CVA risk.

⁹ A CCP's default fund is a 3rd (or sometimes higher) loss tranche in a notional securitisation whose assets are the receivables from those clearing members who are out of the money. Margin represents lower (more equity like) tranches.



We now go on to discuss some of the specific questions set out in the consultative document. Our numbering follows that of the questions in BCBS 219 and is not sequential.

1. The Trading Book/Banking Book boundary

Which boundary option do you believe would best address the weaknesses identified with the current boundary, whilst meeting the Committee's objectives?

We believe that the valuation-based approach best meets the Committee's objectives. Risk to capital resources should, *ceteris paribus*, be capitalised whatever its source, and thus this approach is to be preferred. The disadvantages of the evidence-based approach, in particular the existence of fair valued items in the banking book not attracting Pillar 1 capital requirements, are too significant to be ignored.

The Committee rightly identifies the important issue of multiple and in some cases unhelpful accounting standards. The approach here should be for the Committee to continue to liaise with accounting standards setters, while making those adjustments they deem absolutely necessary to statutory accounts for regulatory purposes (bearing in mind the undesirability of too much divergence between the two sets of financial statements). For instance, the Committee has recently acted in just this fashion with regard to own-credit adjustments¹⁰.

We would also as noted above emphasise the importance of incentives with regard to the boundary. If, as is likely, banking book capital requirements for many assets are **lower** than those in the trading book as a result of the Fundamental Review, there will be powerful incentive from both accounting and regulation to book positions in the banking book. This could result in positions receiving less management attention, as they will produce much lower earnings volatility. It could also make banks more opaque. The Committee should consider whether this outcome is desirable and, if not, act to prevent it during the calibration phase of the Fundamental Review.

Another issue which also relates to potential boundary arbitrage is that of classification standards. Some jurisdictions already display prominent biases towards booking risk in either the banking book or the trading book. The Committee should seek to eliminate these through the work of the Standards Implementation Group, reviewing in particular the classification of similar positions in different jurisdictions and eliminating substantial inconsistencies where these are discovered. Enhanced disclosure requirements, particularly with regard to positions booked in the banking book and to classification standards, also have a role to play here.



2. Factoring in market liquidity

What are commenters' views on the likely operational constraints with the Committee's proposed approach to capturing market liquidity risk including the endogenous component and how might these be best overcome?

In the Key Issues section above we discussed a supervening consideration which may affect the Committee's desire to capture market liquidity risk in the capital framework. If, bearing this in mind, the Committee still seeks a liquidity-sensitive framework, then we would offer the following comments:

- 'Periodic updates to' the assessment of market liquidity runs the risk of dramatic, highly procyclical effects. Those financial instruments that have positive sensitivity to risk factors which are deemed to be less liquid will likely display price falls as soon as the Committee makes their determination. Similarly, a regulatory assessment of increased liquidity could produce an asset-class boom.
- Given the difficulties of revising assessments, we would suggest that any liquidity-risk-sensitive framework should have a small number of large buckets, with membership being determined by general criteria (e.g. major market equity, FX rate, not 'equity trading more than \$2M/day' or 'FX from one of the following crosses'). The minimum liquidity determinations should remain broadly stable over time. In our view, the advantages of such a broad brush approach in reducing procyclicality outweigh the loss of risk differentiation.
- Within this context, we believe that approach 1, varying liquidity horizons in the regulatory market risk metric, is the best approach. We discuss a possible capital calculation methodology further in Appendix 1.
- Some provision of liquidity by banks is clearly a social good. Therefore, should there be a capital incentive for banks that can prove that their trading books are in 'the moving business' rather than 'the storage business'¹¹? Certainly discouraging banks from providing liquidity does not clearly meet the supervisors' objective of promoting financial stability.

It is also important to discuss the role of valuation standards in this context. A fundamental requirement of a fair value standard (which sadly IFRS 9 does not meet) is that the accounting value represents the entities' best estimate of the exit value of a position. Thus liquidity adjustments reflecting the likely impact on the market price of

¹⁰ See *Regulatory treatment of valuation adjustments to derivative liabilities: final rule issued by the Basel Committee*, Basel Committee on Banking Supervision Press Release, July 2012.

¹¹ The phrase 'we are in the moving business, not the storage business' to describe the proper function of a bank's trading book has been variously attributed to senior executives from UBS, Merrill Lynch, and Goldman Sachs.



exiting a large position are appropriate, but adjustments to include prudence with regard to uncertain valuations are not. Rather, these uncertainties should be separately disclosed: a 'best estimate of value' plus 'an estimate of uncertainty in that value' is more useful than just a 'prudent value'.

We strongly support the development of globally consistent regulatory valuation standards. These should include not just principles, but also a comprehensive programme of valuation benchmarking for a wide range of instruments. Various national supervisors already carry out valuation surveys within their jurisdictions; there would be considerable value in extending and harmonising these programmes at the global level.

3. Relationship between standardised and internal models-based approaches

What are commenters' views on the proposed regime to strengthen the relationship between the standardised and internal models-based approaches?

The Basel Accords already contain a backstop which provides protection against any substantial imprudence in internal models-based capital: the leverage ratio. Various national implementations introduce additional backstops such as the Collins Amendment to the United States' Dodd Frank Act. Therefore we do not believe that an additional backstop is required.

There are however three issues which should receive supervisory attention here:

- i. *Model consistency* is a concern which has received substantial comment over recent years. Any credible suggestion, however unwarranted, that a given jurisdiction permits more liberal models reduces the credibility of the Basel Accords as a whole. Therefore the Committee through the Standards Implementation Group should implement an ongoing global programme of model benchmarking¹². This should include the development of a range of test portfolios; regular – perhaps quarterly – runs of these portfolios by banks using internal models; and the imposition of capital add-ons for those banks whose models do not perform adequately.
- ii. *Making model withdrawal a credible threat*. Understandably, supervisors wish to be able to withdraw permission to use internal models from banks without catastrophic consequences. In order for this to be possible, the gap between models-based capital and standard-rules-based capital must be reduced. This requires that all banks calculate standard-rules-based capital on all portfolios on a regular basis, so that the gap is known.

¹² This could take place together with the valuation benchmarking exercise discussed in the preceding section.



It is important that bridging the gap does not introduce a large increase in capital requirements which would often be imposed just when the institution concerned is least able to bear them¹³. For the gap not to be large, either the absolute numbers involved are small, implying that market risk capital requirements are lower than they are now; or the two approaches generate rather similar capital requirements for most portfolios. The latter outcome is undesirable: why have a model-based capital regime, with all its attendant complexity and costs, if it is just going to produce a capital requirement that is 75-90% that of standard rules? A better solution would be to revise the goal so that the removal of permission to use internal models for an asset class (e.g. 'commodities', 'equities') is a credible threat. This reduces the size of the problem, and is wholly consistent with the vision of the next part of the Fundamental Review, where it is contemplated that most large banks will have models permission for some but not all of their Trading Book.

- iii. *Internal models as incentives for bank consolidation.* The internal models framework currently encourages bank consolidation, as a large bank (with models permission) can buy a small bank (without such permission), apply its more beneficial capital regime to the small bank's portfolio, and realise an immediate capital saving. The small bank is deterred from applying for permission to use models by the attendant costs; the large bank can better bear these costs as its portfolio is much bigger. Moreover, as the Basel framework has become more complex, this effect has become more pronounced. Few banks can afford to develop general and specific risk VAR, IRB, AMA, IMM, IRC, CVA and CRM models¹⁴. We believe that all of the banks that currently have permission to use all or nearly all of these models are SIFIs, and most of them are G-SIFIs. From a macroprudential standpoint, then, the internal models framework has encouraged the growth of 'too big to fail' banks. Key objectives in the Fundamental Review should be that most banks can aspire to some level of models permission, and that no SIFI can use it as a competitive weapon in their quest to grow even larger¹⁵.

¹³ Model deficiencies are often only found in a crisis, and hence model permission withdrawal is most likely just when a bank is likely to be making losses (which reduce its available capital and hence its ability to bear the resulting increase in capital requirements).

¹⁴ In passing we note that BCBS 219 does not clarify the ongoing role of CRM models. Does the Committee intend to phase these out as part of the Fundamental Review, or does it intend to continue to carve out the correlation trading portfolio? We would strongly encourage the former position; the Fundamental Review should seek to eliminate much of the 'patchwork quilt' of multiple, inconsistent models that is a feature of the post Basel 2.5 framework.

¹⁵ We would note in passing here that it would be very interesting to compare the benefit of models permissions with the extra capital required for SIFIs. We conjecture that the benefit of having permission to use most of the available internal models regimes more than outweighs even the largest SIFI surcharge.



4. Revised models-based approach

What are commenters' views on the Committee's proposed desk-level approach to achieve a more granular model approval process, including the implementation of this approach for banking book risk positions? Are there alternative classifications that might deliver the same objective?

The Committee's broad approach is sensible. P/L attribution and backtesting are both useful tools in assessing model performance. However, the proposed approach is sufficiently complex and judgmental that uniform implementation will be a substantial challenge. It is therefore vital that the Basel Standards Implementation Group ensures uniformity of

- the processes by which model permissions are given;
- the treatment of non-modellable risk factors; and
- the actual outcomes (i.e. the capital required for the same portfolio at comparable banks in different jurisdictions).

A simpler regime which results in more consistent capital requirements is to be preferred to a more complex, potentially more risk sensitive but in practice inconsistently implemented one.

Fair value items in the banking book will not exist if a valuation-based boundary is used, so this question does not arise in our preferred framework. Indeed, this is one of the reasons why we advocate a valuation-based boundary. Should this not be chosen, we support the Committee's third alternative, i.e. the use of a shadow P/L, flowing through to capital resources, for fair value items in the banking book.

The Committee presents a stylised 'trading desk structure' in Table 4 of BCBS 219. While we understand that this is simply an example, we would stress the importance of banks being permitted to define a trading desk structure which matches their business organisation and risk management hierarchy. The Committee should not seek to impose a 'one size fits all' policy here.

We would make one final remark regarding the use test. This test initially made sense as it was applied to models which credibly could be (and often were) used by firms for their own internal risk management. However, regulatory models have now moved so far from firms' internal risk measures that the current use test is no longer appropriate. This is because regulatory measures are (properly) much further in the tail than many firms' internal measures. Moreover, regulatory permissions only permit modelling of certain risk factors while firms often wish to model those risk factors that they consider significant whether permitted to so by supervisors or not. Thus a more nuanced use test should be developed which continues to create an incentive for good data quality in the regulatory measure but which does not inappropriately require firms to monitor an artificial supervisor-imposed calculation of limited risk sensitivity.



6. Risk Factor Aggregation

What are commenters' views on the merits of the desk-based and risk-factor-based aggregation mechanisms to deliver the Committee's objectives of constraining diversification benefits?

Many desks are susceptible to multiple risk factors, so identifying a 'primary risk factor' can be difficult. Moreover, firms are often organised so that cross-cutting risks are moved using internal trades to the desk which is best able to manage them (e.g. the convertible bond desk executing an interest rate swap with the rates desk to hedge the interest rate risk of one or more bonds). This means that a risk-factor-based aggregation is to be preferred. Such an approach ensures that risks are properly capitalised even if they are not a primary driver of a desk's P/L; it also ensure that there is no incentive for desks to take risks that they are not expert managers of.

7. Discrete credit risk modelling

How can regulators ensure robust supervision of integrated market and credit risk modelling? In particular, how would an integrated modelling approach affect other elements of the proposed framework (eg the choice of the quantile parameter for ES, the P&L attribution and backtesting processes, etc)?

The Basel framework already contains approaches for capitalising default and ratings migration risk; the revised standardised approach and the two IRBs. In our view, a modified version of these approaches could form an adequate basis for capitalising the same risk in the trading book¹⁶. The modifications would, *inter alia*, address the likely shorter maturity of trading book positions.

If the Committee intends to capitalise both credit spread volatility and default/ratings migration risk, as in the Basel 2.5 trading book framework, then the double counting between the two risk should be removed. That is, firms should be permitted to remove credit spread volatility caused by default/ratings migration risk from data series before their use to calculate the market risk charge. This would give a framework where

Trading book capital requirement =
capital for earnings volatility excluding that caused by defaults/ratings transitions +
capital for default/ratings transition risk (calculated according to recalibrated Basel 2)

¹⁶ In fact, these approaches are already used in the trading book, namely in the capital calculation for default/ratings transition risk in the counterparty credit risk framework. Multiple, inconsistent approaches to the same risk taken in different settings invites regulatory arbitrage; this provides another motivation for our suggestion of extending the Basel 2 credit risk approaches to the same risks in the trading book.



Integrated credit and market risk models are fascinating and some of them are formidable intellectual achievements, but they are necessarily highly complex and there is little consensus on important features of their design. This makes inter-bank consistency impossible to achieve. Complex models whose design involves a number of arbitrary but material choices such as these should not play a role in regulatory capital calculation.

We now turn to the issue of idiosyncratic vs. systemic credit risk. The trading book framework has historically been focussed on capitalising idiosyncratic risks via the specific risk charges, with little explicit consideration given to the risk of a systemic stress event with its attendant flights to quality and liquidity. Systemic stress events such as credit crises are however the most important cause of financial instability. A suitably time-stable expected shortfall model (or indeed suitably revised standard rules) should ensure that the capital for credit spread risk does not ignore the losses which could occur in a systemic event. However there remains the issue of whether default and ratings migration risk is appropriately capitalised for such events. Specifically, we are concerned that default correlations used in the Basel 2 IRB formulae may be too low and have the wrong functional dependence on probability of default¹⁷. We therefore recommend that the Committee revisits the calibration of Basel 2 with a view to reparameterising the IRB so that it suitably capitalises default and ratings migration risk given the possibility of systemic stress events¹⁸. An IRB revised on this basis would be of great utility in both banking and trading books, and the supervisory benefits of such a revision would more than justify the work involved.

9 and 10. Revised standardised approach

9. Which of the two approaches better meets the Committee's objectives for a revised standardised approach?

10. Do commenters propose any amendments to these approaches?

The design and calibration of standard rules approaches to capital is an enormously complex task. It is at least as complex as designing internal models approaches – because it must capitalise the same risks – but it is limited to simpler tools. Moreover standard rules can only be recalibrated infrequently, and any recalibration may have considerable impact. Thus while we support the Committee's objective of revising the standard rules approach to market risk, we would counsel caution.

It is vital that the Committee produces a framework that no more complex than is needed to achieve reasonable risk differentiation. As before, the objectives of supervisability and

¹⁷ See for instance *Basel 2: A Case for Recalibration?*, Paul Kupiec, 2006 for more details of these concerns.

¹⁸ It should be noted that the asset class that showed the largest capital savings under Basel 2 in the Committee's impact study – residential mortgages – is also the asset class that caused the largest financial crisis in two generations.



simplicity (with the accompanying benefit of wide understanding) should be paramount. However some evidence is required to analyse the trade-off between the complexity of the capital framework and its ability to capture risk.

Therefore we would suggest the following programme of work:

- The Committee identifies a large number of representative trading book portfolios;
- The P/Ls on each of these portfolios through historical (and perhaps hypothetical) periods of normal and stressed markets are determined;
- A 'target' capital level is chosen and estimated for each portfolio from the observed P/L distributions.
- A variety of different standard rules frameworks are each calibrated to minimise the error between their estimate of capital and the target level¹⁹. The residual error after optimal calibration is a measure of the accuracy of the framework.
- The frameworks are then compared by examining the trade-off between their complexity and accuracy.

It may well be that relatively simple frameworks are acceptably accurate for many test portfolios; alternatively it may be found that only a complex framework with many risk factors will do. In any case, this information would provide objective evidence for preferring one standard rules framework over another.

The Committee states that 'to ensure that the calibration [of the revised standard rules] remains up-to-date it could be repeated periodically, though a stressed calibration should reduce the likelihood of significant changes over time'. We would strongly encourage the Committee to use a stressed calibration which is unlikely to change, as the impact of a substantial change on affected markets could be highly material. Any recalibration should moreover be announced well in advance, and measures should be in place to ensure simultaneous adoption of the revised rules by all Basel Accord signatories.

Finally, the Committee may wish to consider a *de minimis* exemption to market risk capital calculation, as the United States' framework already does. This ensure that the significant costs of implementing a revised framework are not imposed on banks whose market risk are minimal; this policy could be adopted with no risk to financial stability.

¹⁹ This could for instance be done by determining those 'parameters' of the framework such as haircuts which minimise the squared difference between target and estimated capital across all test portfolios.



Concluding remarks

We have stressed in our response the importance of the considering the effects of the proposed changes to the market risk framework. This suggests that the three principles of simplicity, consistency²⁰ and the equitable treatment of different risks are as important as prudence or sensitivity within a risk class. We commend these three principles to the Committee. Further, we would strongly encourage the Committee to consider behavioural effects explicitly in its impact study of the Fundamental Review, setting out not just the changes in capital requirements as a result of their proposal, but also the changes the Committee foresees in the financial system. It is only by a careful consideration of how the financial system will respond to reform²¹ that unintended deleterious consequences can be avoided.

If you have any comments or questions regarding this response, or require further information, please contact David Murphy (david@rivast.com).

Yours sincerely

Dr. David Murphy
principal
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²⁰ I.e. the same risk receives the same capital charge however it is taken.

²¹ This includes, of course, regulatory arbitrages arising as a result of the proposed reforms.



Appendix: A possible models-based method for the calculation of liquidity-risk-sensitive capital for the trading book

This appendix sets out a possible approach to a models-based capital calculation which incorporates multiple liquidity horizons. We assume as given a set of risk factors f_i , each with a set liquidity horizon t_i . This liquidity horizon would be set at the maximum of the regulatory minimum for the risk factor and the firm's assessment of the horizon given the size of its position in the risk factor.

We further assume that each bank can when required generate a set of risk factors paths to a maturity horizon T ,

$$\left\{ \begin{array}{l} \langle f_1(1), f_1(2), \dots, f_1(T) \rangle, \\ \langle f_2(1), f_2(2), \dots, f_2(T) \rangle, \dots \end{array} \right\}$$

which is consistent with some desired correlation or comovement structure (or is simply a historical data series and thus by definition consistent). The idea is then simply to set the maturity T to $\max_i t_i$, i.e. to simulate every risk factor to the maximum liquidity horizon. This ensure that within one simulation, the correlation structure is correct.

Having generated a consistent single possible future for the risk factors, the simulator simply gathers the P/L for the firm's portfolio that would result from each risk factor changing from its current value $f_i(0)$ to $f_i(t_i)$. This is an estimate of the P/L of liquidating the firm's portfolio over time, starting now, with the position in each risk factor being liquidated at the liquidity horizon for that risk factor, assuming the simulated set of risk factor changes.

Another possibility would be to assign a liquidity horizon to each book as the maximum of the liquidity horizons of the risks factors of the instruments in the book. Each book's contribution to the total P/L associated with a given simulation would then be given by its change in value between time zero and the book's liquidity horizon given the generated change in risk factors. Thus the total P/L would represent a realistic liquidation of the book under the simulated conditions.

The simulator then repeats this process many times, obtaining many possible futures of the risk factors. This gives a distribution of liquidation P/Ls. The desired risk measure (e.g. VAR or expected shortfall) is then estimated from this distribution.